* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The printer characterized by establishing a means to evacuate the information which shows printing environments, such as current printing setups, a mode of operation, and cache data, to said external storage when it interrupts from other hosts and a printing demand is during the printing processing by the print data from enternal memory means, such as a hard disk drive unit, and a certain host on said network in the printer used on a network.
[Claim 2] The printer characterized by establishing a means to evacuate the information which shows a current printing environment to said external storage while reading all the print data from said a certain host into said external storage, when it interrupted from other hosts and a printing demand was during reading of the print data from a certain host on said network in a printer according to claim 1.

[Translation done.]

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-143340

(43)Date of publication of application : 29.05.1998

(51)Int.Cl. G06F 3/12
B41J 29/38
G06F 9/46
G06F 13/00

(21)Application number : 08-303272

(22)Date of filing : 14.11.1996

(71)Applicant : RICOH CO LTD

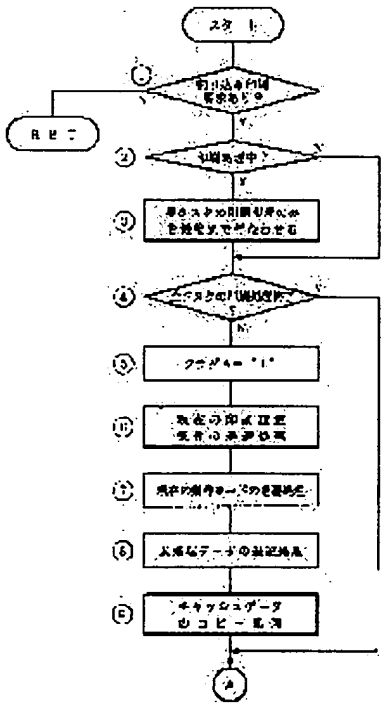
(72)Inventor : KUMAZAWA SACHIKO

(54) PRINTER

(57)Abstract:

PROBLEM TO BE SOLVED: To resume print processing, which has been temporally suspended, in a print environment before suspension after interruption print processing is finished even when the print processing is temporally suspended by an interruption print request of another host during the time when the print processing of print data from one host is performed.

SOLUTION: When an interruption print request comes form another host during print processing of print data from one host on a network, the current print setting conditions, an operation mode and information that shows each print environment of cache data are saved in a disk drive (external storage device), information that shows print environment from a host that makes an interruption print request is read with that state, after the print processing of print data from the host is carried out according to the information, the information showing the print environment which is saved in the disk drive is called out and the print processing, which has been temporally suspended, is resumed.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the printer used on a network.
[0002]
[Description of the Prior Art] In recent years, it connects with a network and the printer equipped with the interface section which communicates with the host on the network (terminal units, such as a personal computer) has appeared on the market. When such a printer is being shared between two or more sets of hosts, each of that host wedges himself to a printer, and demands printing in many cases.
[0003] The printing processing performed now when it interrupts from other hosts and a printing demand is during the printing processing (the usual printing processing) by the print data from a certain host interrupts for a printer side temporarily, and after starting the printing processing (interruption printing processing) by the print data from a host besides the above in the condition and it ending, the printing processing had been interrupted temporarily resumes.
[0004]
[Problem(s) to be Solved by the Invention] However, if interruption printing processing is performed as mentioned above, the printing processing interrupted temporarily [after it is completed] may be resumed in different printing environments (printing setups, a mode of operation, cache data, etc.) from interruption before. Moreover, when it interrupts from a host besides the above, there is a printing demand and reading of the print data from the host who exists the account of a top is not completed, the evil of being unable to shift to the printing processing by the print data from a host besides the above is also produced until it releases the host.
[0005] even when this invention is made in view of the above-mentioned trouble, interrupts from other hosts during the printing processing by the print data from a certain host, and has a printing demand and that printing processing is interrupted temporarily, it carries out for the purpose of enabling it to resume the printing processing interrupted temporarily [after terminating interruption printing processing] in the printing environment before being interrupted -- **. Furthermore, even when you interrupt from other hosts and a printing demand is during reading of the print data from a certain host, also let it be the purpose to enable it to start the interruption printing processing smoothly.
[0006]
[Means for Solving the Problem] In order that this invention may attain the above-mentioned purpose, when it interrupts from other hosts and a printing demand is during the printing processing by the print data from enternal memory means, such as a hard disk drive unit, and a certain host on a network in the printer used on a network, it establishes a means to evacuate the information which shows printing environments, such as current printing setups, a mode of operation, and cache data, to external storage.
[0007] Furthermore, when it interrupts from other hosts and a printing demand is during reading of the print data from a certain host on a network, while reading into external storage all the print data from the host who exists the account of a top, it is good to establish a means to evacuate the information which shows the present printing environment to external storage.

[0008] When according to the printer by this invention it interrupts from other hosts and a printing demand is during the printing processing by the print data from a certain host on a network Since the information which shows printing environments, such as current printing setups, a mode of operation, and cache data, is evacuated to external storage After interrupting the printing processing by the print data from the host who exists the account of a top temporarily and terminating previously the printing processing by the print data from a host besides the above, it can resume in the printing environment before interrupting the printing processing interrupted temporarily.

deleting the old data

[0009] furthermore, the time of interrupting from other hosts and a printing demand being during reading of the print data from a certain host on a network -- the account of a top -- if it makes evacuate the information which shows the present printing environment to external storage while reading all print data into external storage from a certain host -- the account of a top -- even when it interrupts from other hosts and a printing demand is during reading of the print data from a certain host, the interruption printing processing can start smoothly.

[0010]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is concretely explained based on a drawing. Drawing 3 is drawing showing the example of connection by the network with two or more sets of a laser beam printer and hosts who carried out this invention. The laser beam printer 20 has connected two or more sets of Hosts 22A, 22B, 22C, ..., 22X through a network 21.

[0011] Drawing 4 is the block block diagram of the laser beam printer 20 of drawing 3 , and consists of a printer controller 1, and an engine 2, panel equipment 3 and a disk unit 4. a printer controller 1 -- every of CPU6, a program ROM 7, fonts ROM8, RAM9, and NVRAM10, IC card 11, the engine interface (an "interface" is called "I/F" for short below) 12 and panel I/F13, disk I/F14, and host I/F15 -- it consists of I/F.

[0012] CPU6 is a central processing unit which controls the printer controller 1 whole by the mode directions from the program and the panel equipment 3 of a program ROM 7, and the command from a host. The read only memory in which the program ROM 7 stores the control program of this printer controller 1, and a font ROM 8 are read only memories which memorize an outline font etc.

[0013] RAM9 is a random access memory used for the font file for storing the bit map memory for storing the cache memory for storing what carried out image expansion of the page buffer for storing the input buffer for storing the work-piece memory for CPU6, and input data, and page data, and the outline font (cache data) (a cache being carried out), and bit map data, and a download font etc.

[0014] NVRAM10 is nonvolatile memory which memorizes the contents of the mode directions from panel equipment 3 etc., and IC card 11 is a removable memory card used when supplying font data and a program from the outside.

[0015] An interface for engine I/F12 to perform the communication link of the engine 2, the command and the status which actually print on a form, or print data, and panel I/F13 are interfaces which perform the communication link of the panel equipment 3, the command, and the status which tell a user about the condition of the present printer, or perform mode directions. Disk I/F14 is an interface for communicating with a disk unit 4.

[0016] Host I/F15 is two or more sets of Hosts 22A, 22B, 22C, ..., 22X, and a network interface in which two-way communication is possible respectively through the network 21 shown in drawing 3 . A disk unit 4 is external storage (enternal memory means) which memorizes various data, such as font data, and a program, print data, and are a floppy disk drive unit (FDD), a hard disk drive unit (HDD), etc.

memory

[0017] When this printer controller 1 interrupts from other hosts during the printing processing by the print data from a certain host on a network 21 and there is a printing demand here, the function as a means to evacuate the information which shows printing environments, such as current printing setups, a mode of operation, and cache data, to a disk unit 4 is achieved. Or when it interrupts from other hosts and a printing demand is during reading of the print data from a certain host on a network 21, while reading all print data into a disk unit 4 from the host who exists the account of a top, the function as a means to evacuate the information which shows a current printing environment to a disk unit 4 is also

achieved.
[0018] Drawing 1 and drawing 2 are flow charts which show an example of the processing corresponding to claim 1 by CPU6 of this laser beam printer. This routine is called by the main routine which is not illustrated, is started, and checks the existence of the interruption printing demand from one of hosts at step 1 first, and if there is no interruption printing demand, it will carry out a return to a main routine as it is.
[0019] Moreover, if there is an interruption printing demand, it will check [whether it is under / by the print data from other hosts / printing processing (printing processing of two or more printing tasks) / ******, and] at step 2, and if it is not [printing / be / it] under processing, if it is [printing] under processing, after making only printing processing of a printing task current at step 3 perform to the last, it will check [whether printing processing of all printing tasks ended at step 4, and] as it is.
[0020] And the printing setups of the present when NVRAM10 memorizes at the steps 6 and 7 although it shifts to step 10 of drawing 2 as it is when printing processing of all the printing activity task is completed, if the still unsettled printing activity task remains, after setting the flag A predetermined at step 5 to "1", and a mode of operation are called, respectively, and it is made to evacuate to a disk unit 4.

[0021] Subsequently, the unsettled print data memorized by the input buffer of RAM9 at step 8 are read, it is made to evacuate to a disk unit 4, the cache data memorized by the cache memory of RAM9 at step 9 are read, and it copies to a disk unit 4 (making it evacuate), and interrupts at steps 10 and 11 of drawing 2 , and the printing setups from the host of a printing demand place and a mode of operation are read into NVRAM10, respectively.
[0022] Furthermore, it interrupts at step 12, the print data from the host of a printing demand place are read into the input buffer of RAM9, and printing processing by the above-mentioned print data is performed according to the above-mentioned printing setups and a mode of operation at step 13. That is, according to the above-mentioned printing setups and a mode of operation, the above-mentioned print data are developed in the shape of a bit map on the bit map memory of RAM9, and it sends to an engine 2 as a video data, and is made to print on a form.
[0023] After the printing processing is completed, if it checks and is not set to "1", the return of whether Flag A is set to "1" at step 14 is carried out to a main routine as it is, but if set to "1", the printing setups and the mode of operation which made it evacuate to a disk unit 4 at steps 15 and 16 will be called, respectively, and it will re(it is made to return) memorize to NVRAM10.
[0024] Subsequently, read the cache data copied to the disk unit 4 at step 17, and the cache memory of RAM9 is overwritten. Read the unsettled print data evacuated to the disk unit 4 at step 18, and it writes in an input buffer again (making it return). After resuming the printing processing (printing processing of the remaining printing tasks) interrupted temporarily and making it carry out to the last at step 19, Flag A is reset to "0" at step 20, and a return is carried out to a main routine.
[0025] Thus, by evacuating the information which shows a current printing environment to a disk unit (external storage) 4, when it interrupts from other hosts and a printing demand is during the printing processing by the print data from a certain host on a network 21 It can resume in the printing environment before interrupting the printing processing by the print data from the host who exists the account of a top temporarily, and interrupting the printing processing which was made to end previously the printing processing by the print data from a host besides the above, and had been interrupted after that temporarily, and does not need to be influenced at all by interruption printing processing.
[0026] Drawing 5 and drawing 6 are flow charts which show an example of the processing corresponding to claim 2 by CPU6 of this laser beam printer. This routine is also called by the main routine, and is started, the existence of the interruption printing demand from one of hosts is first checked at step 21, and if there is no interruption printing demand, a return will be carried out to a main routine as it is.
[0027] Moreover, if there is an interruption printing demand, it will confirm at step 22 whether to be under [print data from other hosts reading (reception)-] ******, and although processing after drawing 1 mentioned above at step 37 and step 2 of drawing 2 will be performed if it is not [be / it] under

reading, if it is not [be / it] under reading, print data [finishing / reading / already] (print data memorized by the input buffer of RAM9) will be evacuated to a disk unit 4 at step 23 (it reads).
[0028] Subsequently, are calling the current printing setups and the mode of operation which the above-mentioned host's remaining print data are memorized by the hard disk drive unit 4 at step 24, and are memorized by NVRAM10 at direct reading and steps 25 and 26, respectively, it is made to evacuate to a disk unit 4, the cache data memorized by the cache memory of RAM9 at step 27 are read, and it copies to a disk unit 4 (it is made to evacuate).
[0029] Then, it interrupts at steps 28 and 29 of drawing 6 , and the printing setups from the host of a printing demand place and a mode of operation are read into NVRAM10, respectively, it interrupts at step 30, the print data from the host of a printing demand place are read into the input buffer of RAM9, and printing processing by the above-mentioned print data is performed according to the above-mentioned printing setups and a mode of operation at step 31.
[0030] After the printing processing is completed, are calling the printing setups and the mode of operation which made it evacuate to a disk unit 4 at steps 32 and 33, respectively, and it re(making it return) memorizes to NVRAM10. Read the cache data copied to the disk unit 4 at step 34, and the cache memory of RAM9 is overwritten. Read the print data of ****** which made it evacuate to a disk unit 4 at step 35, and write in an input buffer (making it transmit), and resume the printing processing interrupted for step 36 temporarily, it is made to carry out to the last, and a return is carried out to a main routine.
[0031] Thus, when it interrupts from other hosts and a printing demand is during reading of the print data from a certain host on a network, while reading all print data into external storage from the host who exists the account of a top By evacuating the information which shows a current printing environment to a disk unit 4 Even when in addition to above-mentioned effectiveness it interrupts from other hosts and a printing demand is during reading of the print data (especially a lot of print data) from the host who exists the account of a top, the interruption printing processing can be started smoothly.
[0032] As mentioned above, although the operation gestalt which applied this invention to the laser beam printer was explained, this invention can be applied not only to this but to other printers, such as an LED printer and a liquid crystal shutter printer. Moreover, this invention is also applicable to other equipments, such as facsimile apparatus, a scanner, a digital copier, and a compound machine.
[0033]
[Effect of the Invention] As explained above, even when according to this invention it interrupts from other hosts during the printing processing by the print data from a certain host, there is a printing demand and that printing processing is interrupted temporarily, the printing processing interrupted temporarily [after terminating interruption printing processing] can be resumed in the printing environment before being interrupted.
[0034] Furthermore, even when according to invention of claim 2 it interrupts from other hosts and a printing demand is during reading of the print data from a certain host, the interruption printing processing can also be started smoothly.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the flow Fig. showing an example of the processing corresponding to claim 1 by CPU6 of drawing 4 .
[Drawing 2] It is the flow Fig. showing processing of the continuation.
[Drawing 3] It is drawing showing the example of connection by the network with two or more sets of a laser beam printer and hosts who carried out this invention.
[Drawing 4] It is the block block diagram of the laser beam printer 20 of drawing 3 .
[Drawing 5] It is the flow Fig. showing an example of the processing corresponding to claim 2 by CPU6 of drawing 4 .
[Drawing 6] It is the flow Fig. showing processing of the continuation.
[Description of Notations]
1: Printer controller 2: Engine
3: Panel equipment 4: Disk unit
6: Central processing unit (CPU) 7: Program ROM
8: Font ROM 9:RAM
10: NVRAM 11: IC card
12: Engine I/F 13: Panel I/F
14: Disk I/F 15: Host I/F
20: Laser beam printer 21: Network
22A, 22B, 22C, ..., 22X: Host

[Translation done.]

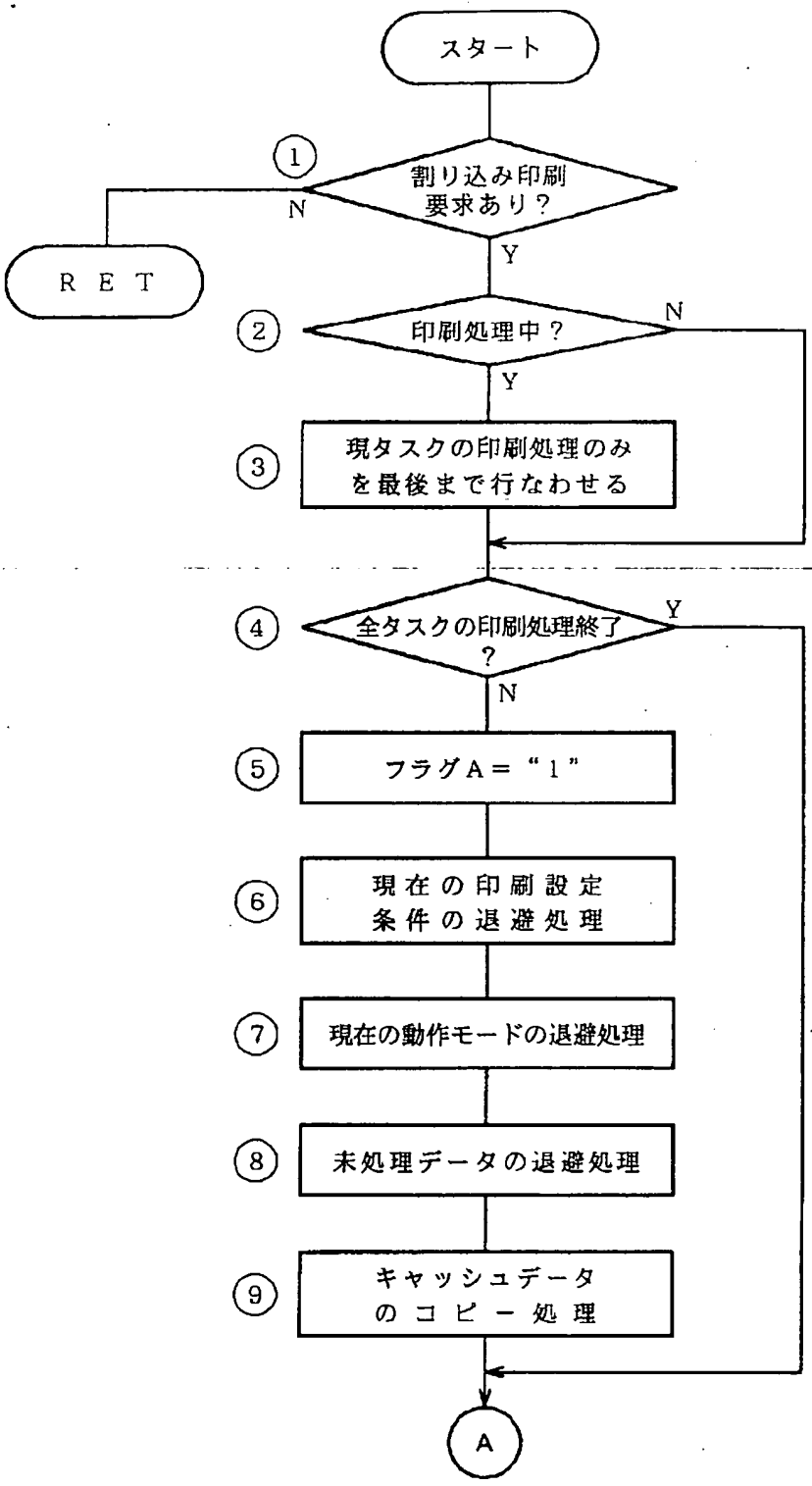
1 / 1

* NOTICES *

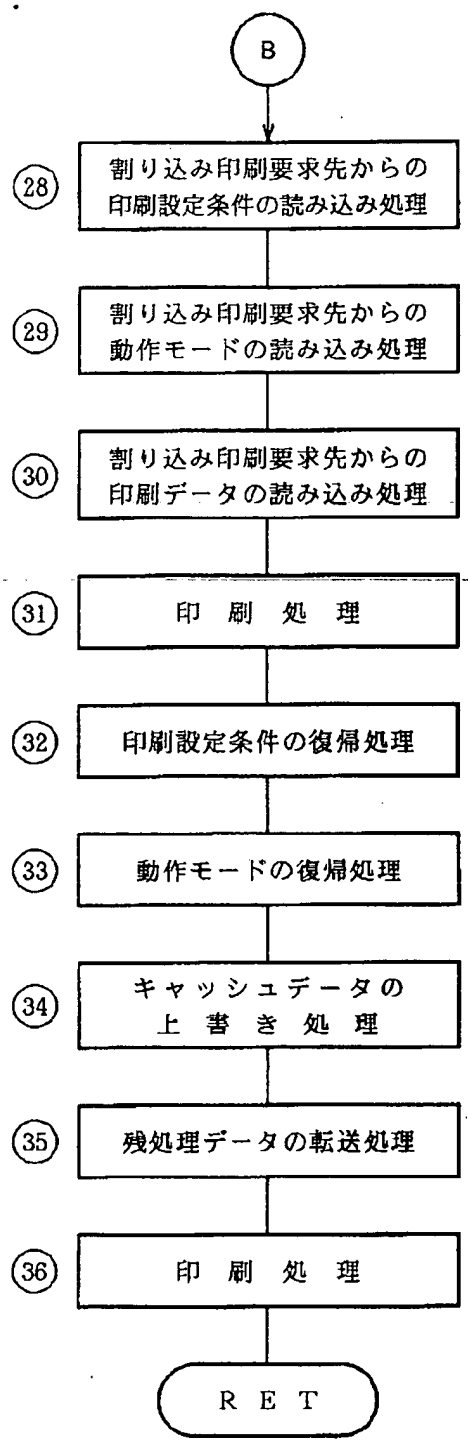
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

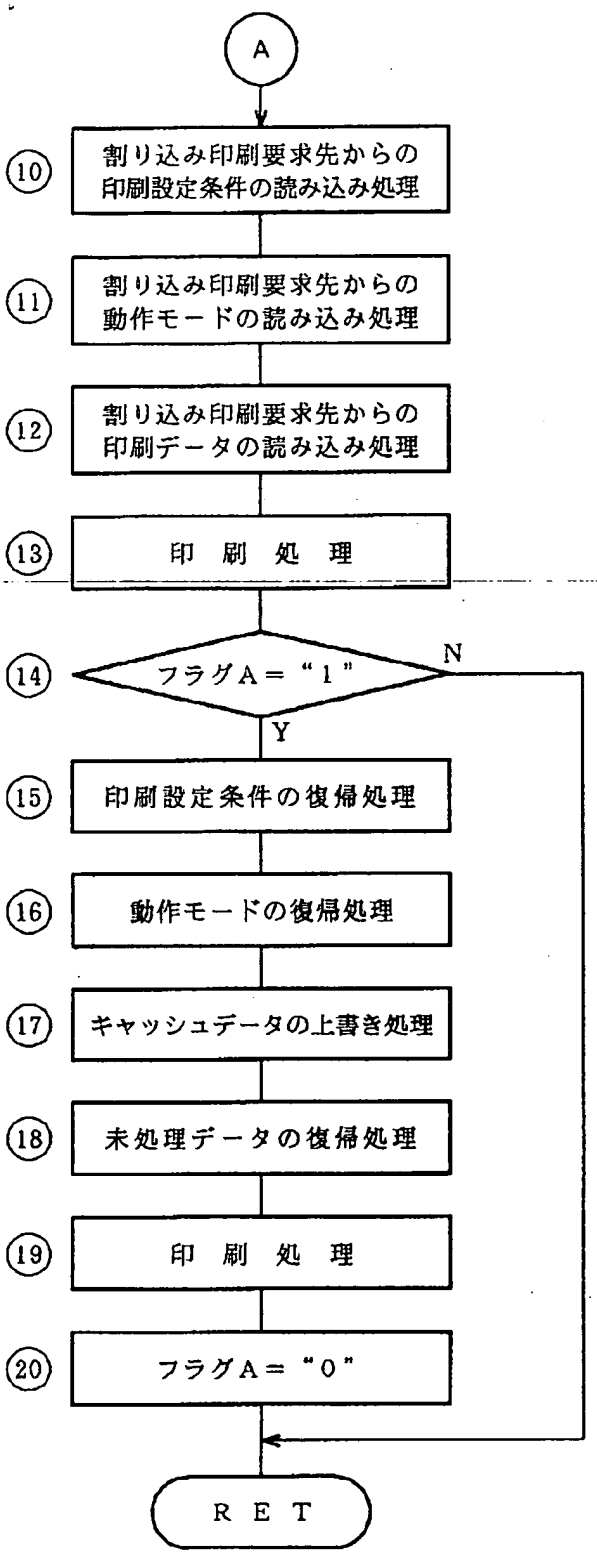
[Drawing 1]


スタート
1
割り込み印刷
要求あり？
N
Y
R E T
2
印刷処理中？
N
Y
3
現タスクの印刷処理のみ
を最後まで行なわせる
4
全タスクの印刷処理終了
？
Y
N
5
フラグA＝“1”
6
現在の印刷設定
条件の退避処理
7
現在の動作モードの退避処理
8
未処理データの退避処理
9
キャッシュデータ
のコピー処理
A

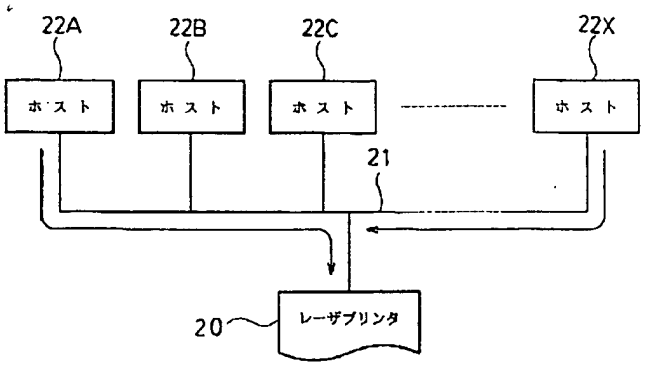
[Drawing 6]


B
(28)
割り込み印刷要求先からの
印刷設定条件の読み込み処理
(29)
割り込み印刷要求先からの
動作モードの読み込み処理
(30)
割り込み印刷要求先からの
印刷データの読み込み処理
(31)
印 刷 処 理
(32)
印刷設定条件の復帰処理
(33)
動作モードの復帰処理
(34)
キャッシュデータの
上 書 き 処 理
(35)
残処理データの転送処理
(36)
印 刷 処 理
R E T

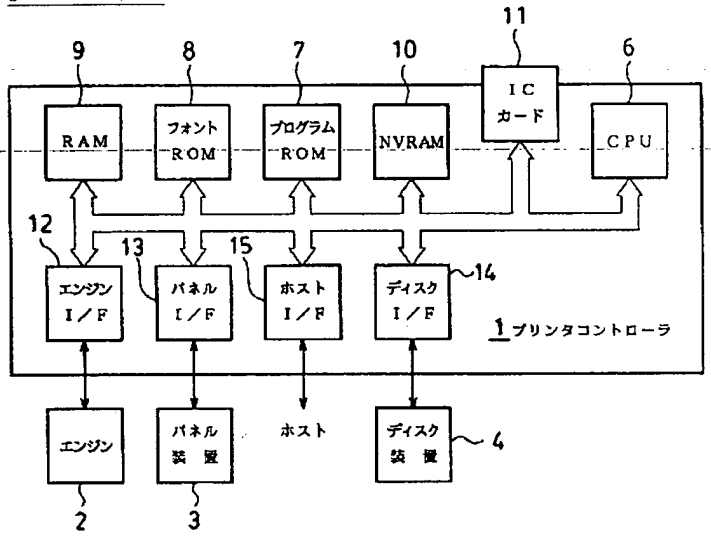
[Drawing 2]


A
⑩
割り込み印刷要求先からの
印刷設定条件の読み込み処理
⑪
割り込み印刷要求先からの
動作モードの読み込み処理
⑫
割り込み印刷要求先からの
印刷データの読み込み処理
⑬
印 刷 処 理
⑭
フラグA＝“1”
N
Y
⑮
印刷設定条件の復帰処理
⑯
動作モードの復帰処理
⑰
キャッシュデータの上書き処理
⑱
未処理データの復帰処理
⑲
印 刷 処 理
⑳
フラグA＝“0”
R E T

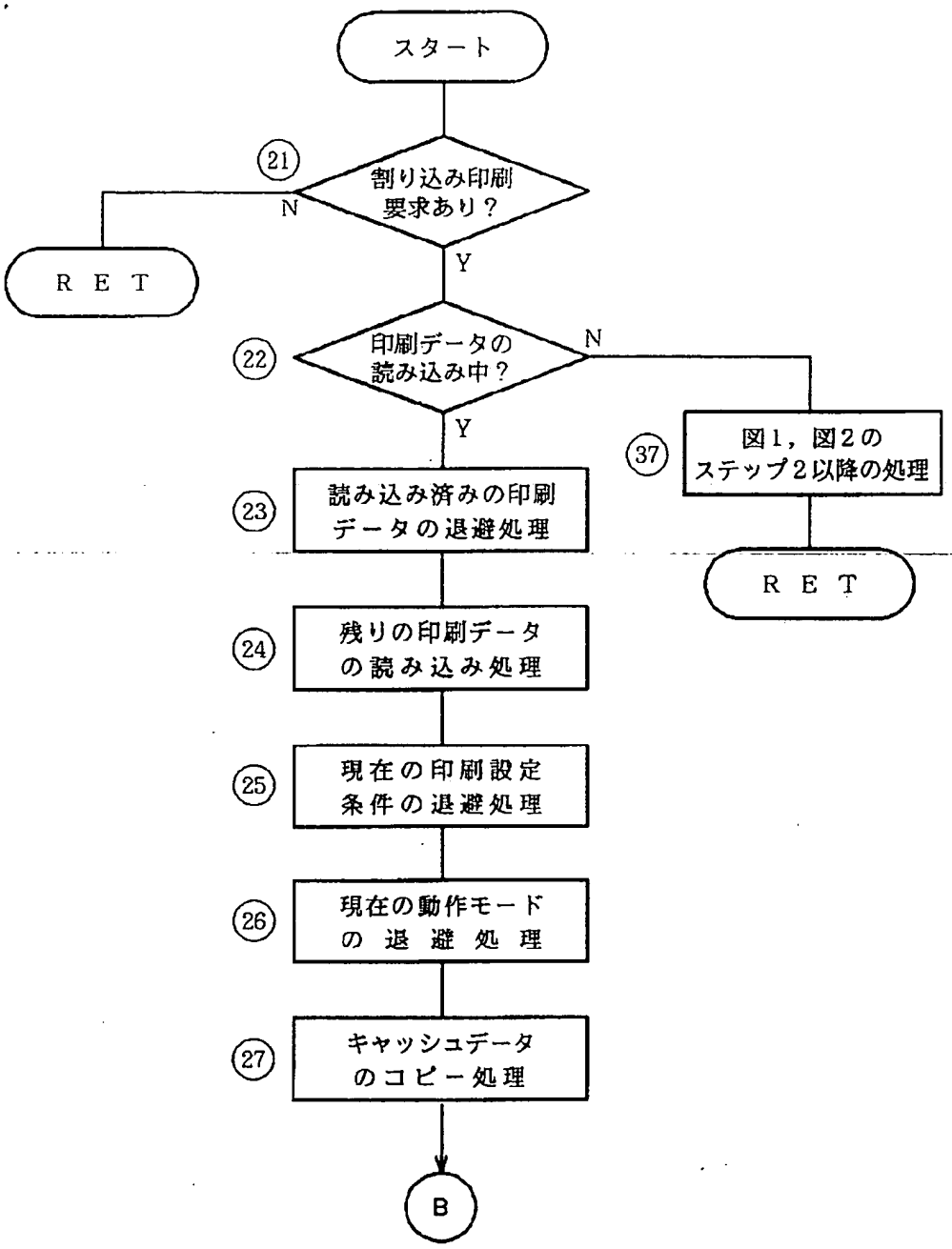
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]